

Amendments to the Claims:

Claims 1 through 45 (Canceled).

46. (Currently amended) High rate depth filtration apparatus for removing suspended solids from liquids, said apparatus comprising:

- a) a filter housing having an axial flow direction therethrough for liquid;
- b) a first perforated panel fixedly secured in said housing transverse to said flow direction;
- c) a second perforated panel movably secured in said housing transverse to said flow direction and spaced from said first perforated panel;
- d) an influent liquid conduit located adjacent said fixed first panel, said influent conduit connected to a source of liquid having suspended solids therein;
- e) an effluent liquid conduit located adjacent said movable second panel thereby establishing said axial flow direction through said housing from said influent conduit to said effluent conduit;
- f) substantially spherical and compressible filtration media of individual, fibrous lumps of bundled, crimped fibers located between said first and second panels; and
- g) a piston for moving said second perforated panel toward and away from said fixed first panel to define:
  - i) a fixed filter bed of said media compressed between said panels during filtration, said filter bed having a porosity gradient across the bed proceeding progressively from more porous to less porous in said axial flow direction; and
  - ii) a cleaning chamber between said panels during washing wherein said second panel is moved away from said first panel to provide said media in an uncompressed condition for washing in said axial flow direction.

47. (Cancelled).

48. (Previously presented) The high rate filtration apparatus of Claim 46 wherein said effluent liquid conduit comprises a filtered liquid effluent conduit and a separate wash water effluent conduit.

49. (Previously presented) The high rate filtration apparatus of Claim 46 further comprising a distribution plenum located between said liquid influent conduit and said fixed first perforated panel, whereby liquid is evenly distributed through said first panel and into said filter bed.

50. (Previously presented) The high rate filtration apparatus of Claim 46 wherein said axial flow direction is upflow, said fixed first panel is located below said movable second panel, said influent liquid conduit is located below said fixed first panel, and said effluent liquid conduit is located above said movable second panel.

51. (Previously presented) The high rate filtration apparatus of Claim 50 further comprising a gas injection conduit located adjacent said first panel for supplying air to mechanically shear trapped solids from said media in said cleaning chamber.

52. (Previously presented) The high rate filtration apparatus of Claim 51 wherein said gas injection conduit comprises two air conduits whereby air injection is alternated between said two conduits to increase the mechanical effect of shearing trapped solids from said media.

53. (Cancelled).

54. (Cancelled).

55. (Previously presented) The high rate filtration apparatus of Claim 46 wherein collector size, effective pore size, and depth of said filter bed are adjustable by movement of said second panel as filtration proceeds, whereby head loss can be adjusted and filtration efficiency maintained during filtration by mechanically expanding said fixed bed.

56. (Cancelled).

57. (Previously presented) Up-flow high rate filtration apparatus for removing suspended solids from waste water, said apparatus comprising:

a) a vertically oriented filter housing having a waste water influent conduit located in a lower portion thereof and separate filtered water and wash water effluent conduits located in an upper portion thereof, said conduits establishing an upward axial flow direction through said housing;

b) a first perforated panel fixedly secured in said housing above said influent waste water conduit and transverse to said axial flow direction;

c) a second perforated panel movably secured in said housing transverse to said axial flow direction, above said first panel and spaced therefrom, and below said filtered water and wash water effluent conduits;

d) a distribution plenum located between said influent waste water conduit and said fixed first perforated panel, whereby waste water is evenly distributed through said first panel in said axial flow direction;

e) substantially spherical and compressible filtration media of individual, fibrous lumps or bundled, crimped fibers located between said first and second panels;

g) a piston for moving said second perforated panel toward and away from said fixed first panel to define:

i) a fixed filter bed of media compressed between said panels, said fixed filter bed having a porosity gradient across the bed proceeding progressively from more porous to less porous in said axial flow direction, wherein collector size,

effective pore size, and depth of said filter bed are adjustable by movement of said second panel as filtration proceeds and whereby head loss can be adjusted and filtration efficiency maintained during filtration by mechanically expanding said fixed bed; and

ii) a cleaning chamber between said panels during washing wherein said second panel is moved away from said first panel to provide said media in an uncompressed condition for washing; and

h) a pair of air conduits located below said fixed first panel on opposite sides of said housing whereby air injection is alternated between said conduits into said cleaning chamber to increase the mechanical effect of shearing trapped solids from said media.

58. – 60. (Cancelled)

61. (Previously presented) The high rate filtration apparatus of Claim 46 wherein said influent conduit is connected to said cleaning chamber and supplies liquid having suspended solids therein to said cleaning chamber for washing.

62. (Previously presented) The up-flow high rate filtration apparatus of Claim 57 wherein said waste water influent conduit is connected to said cleaning chamber and supplies waste water thereto for washing.

63. (Cancelled)